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REMARKS

Claims 1-3, and 7-25 are pending in the present Application. Claims 7-17 and 20-25 have been cancelled without prejudice, Claims 26-33 has been added, leaving Claims 1-3, 18-19, and 26-33 for consideration upon entry of the present Amendment.

Applicants respectfully submit that PTO form 326 is inconsistent with the Office Action. More particularly, on the form, the Examiner listed Claims 7-18 and 21-25 as withdrawn and Claims 1-3 and 19-20 as rejected. However, on page 2 of the Office Action, the Examiner listed Claims 1-3, 18 and 19 as the claims elected for prosecution. For the purposes of this response, Applicants assumed that PTO form 326 was a mere typographical error, and the group I claims were rejected, i.e., Claims 1-3, 18, and 19.

Applicants have amended the specification merely to correct a typographical error contained therein.

Antecedent basis for new Claims 26 and 33 can be found at least in the specification at page 6, lines 25-27 and originally filed Claim 9.

Antecedent basis for new Claim 27-28 can be found at least in the specification at page 6, lines 9-27, and Claim 1.

Antecedent basis for new Claims 29-32 can be found at least in Claims 2-3 and 18-19.

No new matter has been introduced by these amendments. Reconsideration and allowance of the claims is respectfully requested in view of the above amendments and the following remarks.

Election/Restriction

Applicants affirm the provisional election made by Pamela J. Curbelo on Sept. 5, 2003 electing to prosecute Group I, Claims 1-3, 18 and 19. Applicants cancel Claims 7-17 and 20-25 without prejudice to Applicants' right to filing a divisional or a continuation Application with respect to these claims.

Oath/Declaration

The Examiner alleged that the oath or declaration is defective because it has not been signed by two of the inventors.

Applicants submit herewith a copy of a returned post card, which indicates the USPTO received a "Declaration/Designation of Correspondence Address (2)(4 pages)." (Postcard). Applicants also submit herewith a copy of the two signed declarations for the Examiner's convenience.

Claim Rejections Under 35 U.S.C. § 102(b)

Claims 1-3 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by the reference "How Oil Refining Works" (HSW). Applicants respectfully traverse this rejection.

Independent Claim 1 is directed to a method of using a diesel reforming strategy, comprising: supplying diesel fuel to a fractional distillation device in fluid communication with a reformer, wherein the diesel fuel consists essentially of compounds having a carbon number of about C_8 to about C_{20}; fractionally distilling said diesel fuel to produce a light fuel stream and a heavy fuel stream; and reforming said light fuel stream in said reformer to produce a reformate.

The reference "How Oil Refining Works" teaches that crude oil contains hundreds of different types of hydrocarbons all mixed together. (HSW, page 2). This crude oil is feed to a distillation column. (HSW, Figure 2, page 3). "Different hydrocarbon chain lengths all have progressively higher boiling points, so they can be separated by distillation." (HSW, page 3). The reference further teaches that Naptha or Ligroin is an intermediate that will be further processed to make gasoline. (HSW, page 3). This process of combining smaller hydrocarbons to make larger ones is called unification. "The major unification process is called catalytic reforming and uses a catalyst (platinum, platinum-rhenium mix) to combine low weight naptha into aromatics, which are used in making chemicals and in blending gasoline." (HSW, page 7).

To anticipate a claim, a reference must disclose each and every element of the claim. *Lewmar Marine v. Varient Inc.*, 3 U.S.P.Q.2d 1766 (Fed. Cir. 1987).

Applicants teach, *inter alia*, "supplying diesel fuel to a fractional distillation device in fluid communication with a reformer, wherein the diesel fuel consists essentially of compounds having a carbon number of about C_8 to about C_{20}". In contrast to Applicants' Claim 1, the "How Oil Refining Works" reference teaches feeding crude oil into a distillation column. As is illustrated in Figure 2 of the "How Oil Refining Works" reference, the crude oil comprises "residuals", e.g., coke asphalt, tar. These residuals comprise carbon molecules having a carbon

number of greater than or equal to 70. (HSW, page 3). As such, the reference does not teach supplying diesel fuel to a fraction distillation device. Moreover, Applicants claim that the "diesel fuel consists essentially of compounds having a carbon number of about C_8 to about C_{20}". Since the "How Oil Refining Works" reference teaches feeding crude oil comprising hydrocarbons have a carbon number of 4 to a carbon number of 80, the reference does not teach supplying diesel fuel consisting essentially of compounds having a carbon number of about C_8 to about C_{20} to a distillation device. As such, this reference does not teach each and every limitation of independent Claim 1. Moreover, as a dependent claim from an allowable independent claim, Claims 2-3 and 18-19 are, by definition, also allowable.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 19 and 3 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over the reference "How oil Refining works" in view of U.S. Patent No. 4,522,894 to Hwang et al. Applicants respectfully traverse this rejection.

Hwang et al. teach a process for generating electricity from a fuel cell including generating a hydrogen-rich gas as the fuel for the fuel cell by treating a hydrocarbon feed in an autothermal reformer. (Abstract).

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness, i.e., that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceutical Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

Hwang et al. fail to cure the deficiencies of the "How Oil Refining Works" reference. More particularly, Hwang et al. do not teach or suggest "supplying diesel fuel to a fractional distillation device in fluid communication with a reformer, wherein the diesel fuel consists essentially of compounds having a carbon number of about C_8 to about C_{20}". In making, the

rejection the Examiner relied upon Hwang et al. merely for their teaching of an "autothermal reformer."

Hwang et al. teach "most fuel cells are sensitive to hydrocarbons in the hydrogen fuel, so that it is necessary to eliminate or reduce to very low levels any residual hydrocarbons in the hydrogen fuel." (Col. 1, lines 58-61). Hwang et al. teach that hydrogen may be prepared by steam reforming of lighter hydrocarbons such as natural gas and napthas. (Col. 1, lines 45-50). In contrast to Hwang et al., the "How Oil Refining Works" reference teaches using a reformer to combine naptha to form larger hydrocarbons. In other words, reformers used in oil refining industry are not analogous to "reformers" used in fuel cell technology. Actually, based on the teachings of "How Oil Refining works" and Hwang et al., the respective reformers perform opposite functions. As discussed, the reformer of the "How Oil Refining Works" reference combines smaller hydrocarbons into larger hydrocarbons, whereas the reformer of Hwang et al. is used to make smaller molecules from the hydrocarbons, i.e., Hwang et al. teach using the lighter hydrocarbons (e.g., natural gas and naptha) to make hydrogen gas. Since the reformers are not analogous art, one skilled in the art of fuel cell technology would not turn to the oil refining industry to solve problems related to reformers used to produce synthesis gas. As such, absent in these references is the motivation to combine the references.

Nevertheless, even if the reformer of Hwang et al. were combined with the HSW reference, there would be no expectation of success. As discussed, above the reformers of each industry perform different functions. Absent in both references is any teaching or suggestion that a reformer used to generate synthesis gas may also be used to generate large hydrocarbons. Rather, as mentioned above, Hwang et al. teach eliminating hydrocarbons in the fuel feed to the fuel cell. Accordingly, one skilled in the art would at least expect that the "reformer" of the oil refining industry would not work as a "reformer" for the fuel cell technology. As such, Hwang et al. do not cure the deficiencies of the HSW reference. More particularly, Hwang et al. do not teach or suggest fractionally distilling diesel fuel to produce a light fuel stream and a heavy fuel stream; and reforming the light fuel stream in the reformer to produce a reformate.

Furthermore, absent in the cited references, either alone or in combination, is any teaching or suggestion of using fractional distillation in relation to a reformer used in fuel cell technology. There is not motivation to use a fractional distillation device with a "reformer" of

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the fuel cell technology. Moreover, the above cited references fail to suggest any expectation of success in combining a fractional distillation device with a reform or the fuel technology, Rather, the above cited art illustrate the differences between the two reformers of the different areas of technology.

For at least these reasons, Applicants' independent Claim 1 is not obvious over the "How Oil Refining Works" reference in view of Hwang et al. Moreover, as a dependent claim from an allowable independent claim, Claims 2-3 and 18- 19, are, by definition, also allowable.

Prior Art Made of Record

The Examiner has not relied upon the prior art made of record in making the rejections cited in the Office Action. Nonetheless, Applicants submit that Applicants' invention, as defined by Applicants' claims is not anticipated by or obvious in view of the prior art made of record.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,

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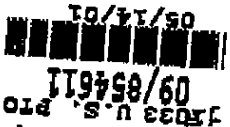

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Date Mailed: MAY 14, 2001
Applicant: M. JAMES GRIEVE, ET AL.
For: DIESEL FUEL REFORMING STRATEGY

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Utility Patent Application Transmittal Letter (4 pages); Application consisting of: Specification (10 pages); Claims (17); Abstract (1 page); Declaration/Designation of Correspondence Address (2)(4 pages); Drawing (1 sheet); Recordation Cover Sheet (1 page); Assignment of the Invention to Delphi Technologies, Inc. (2)(2 pages); Information Disclosure Statement (2 pages); Form PTO-1449 (1 page); Known Art (2 references); Certificate of Mailing (1 page); Post Card Receipt

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